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SOURCE Mekhanizatsiya Trudovymkikh 1 Tvazhelykh Rabot, No 9, 1951.USE OF BELT CONVEYERS IN OPEN-PIT COAL MINING IN THE USSR

N. A. Lapovenko

Open-pit coal mining in the USSR is the most mechanized branch of the mining industry. In working coal pits the basic phases of overburden removal and coal extraction are almost completely mechanized. Belt conveyers are used widely to transport coal from the mine face to railroad bunkers. They are also used for moving coal within pits and for removal of rock and forming dumps.

Their chief advantages are as follows. The small size of the conveyor installation permits operations in cramped conditions, they present the possibility of carrying on under complicated hypsometric conditions and with an angle of dip up to 20 degrees; the continuity of transport favors better exploitation of the extraction excavators than in the case of railroad or automobile transport; it is possible to clean coal in the process of conveying it from the extraction section to storage; it is possible to maintain central control for the coal-conveying lines; it is more economical to use belt conveyers than conveyers of other types.

Belt conveyers were already used in 1935 in the Khrantsovskiy coal pit in the Cheremkhov deposit. Their use has spread widely since 1938 with the putting into operation of very large coal pits such as the Korkino and the Bogoslovskiy. Recently, belt conveyers have been adopted widely in the Volchansk pits. Conveyor lines extend in all for many kilometers they exceed 15 kilometers in pits of the Korkinugol' Trust, and they extend for 10 kilometers in the Vakhrushevugol' Trust and 6 kilometers in pits of the Volchanskugol' Trust.

The complete conveyor system of Pit No 1 in Korkino is given in the following table:

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<u>Conveyor Type</u>	<u>No of Conveyers</u>	<u>Length of One Conveyor (m)</u>	<u>Width of Belt (mm)</u>	<u>Speed of Belt (m/sec)</u>
Face	19	30-95	900	1.5
Gathering	11	34-92	900	1.5
Hoist	24	30-90	900	1.5
Picking	3	16-20	1,000	1.2
Stockpiling	5	37	900	1.2
Auxiliary	6	15-86	900	1.2-1.5

This makes a total of 68 conveyers being exploited in this one coal pit; their total length is approximately 4,000 meters.

The RT-60 belt conveyers have been used extensively for open-pit mining, and operate in the most varied sections of coal pits. The supporting structure of these conveyers is either stationary or semistationary according to the conditions under which they are used and the place they are installed. The belt of the conveyor is 900 millimeters wide, and it has a speed of 1.5 meters per second. The productivity of the RT-60 is up to 300 tons per hour and its estimated length with horizontal adjustment is 300 meters. The electric motor has a capacity of 46 kilowatts.

Giprouglemash (State Institute for Planning Coal-Mining Machinery) has developed the LO-1 swing-chute belt conveyor to transport rock overburden. The LO-1 has a boom with a 50 meter swing and is track mounted. The belt of the conveyor is 1,000 millimeters wide, has a speed of 1.5 meters per second, and is inclined at an angle of 18 degrees to the horizontal. The capacity of the electric motor is 61 kilowatts.

An experimental model of the LO-1 made by the Aleksandrovskiy Plant was tried out in November 1950 in the Severnyy Open Pit of the Raychikhugol' Trust. The rock to be removed consisted of alternating layers of clay and sand and contained considerable moisture. The rock is loaded by the SE-3 3-cubic-foot excavator into a bunker from which it is evenly fed to the belt conveyor. The average productivity of the conveyor is 300-320 cubic meters per hour with a maximum of 420.

Other belt conveyers in use are the KRU-250 with a productivity of 250 tons per hour and a speed of 1.07 meters per second, the KRU-300 with a productivity of 310 tons per hour and a speed of 1.07 meters per second; the KLZ-300 with a productivity of 300 tons per hour and a speed of 1.5 meters per second; and the KRP-300 with a productivity of 300 tons per hour and a speed of 1.5 meters per second.

The KLZ-300 is meant for use at the mine face. It consists of separate light-weight parts which can be moved frequently and easily.

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